



Significant Weather Observation Program



Fall 2011 Meeting



Matt Barnes
Chuck Schaffer

NWS Lincoln, IL

2011: A Year of Extreme Weather

Groundhog Day Blizzard

12 to 18 inches
of snow along
and west of I-55

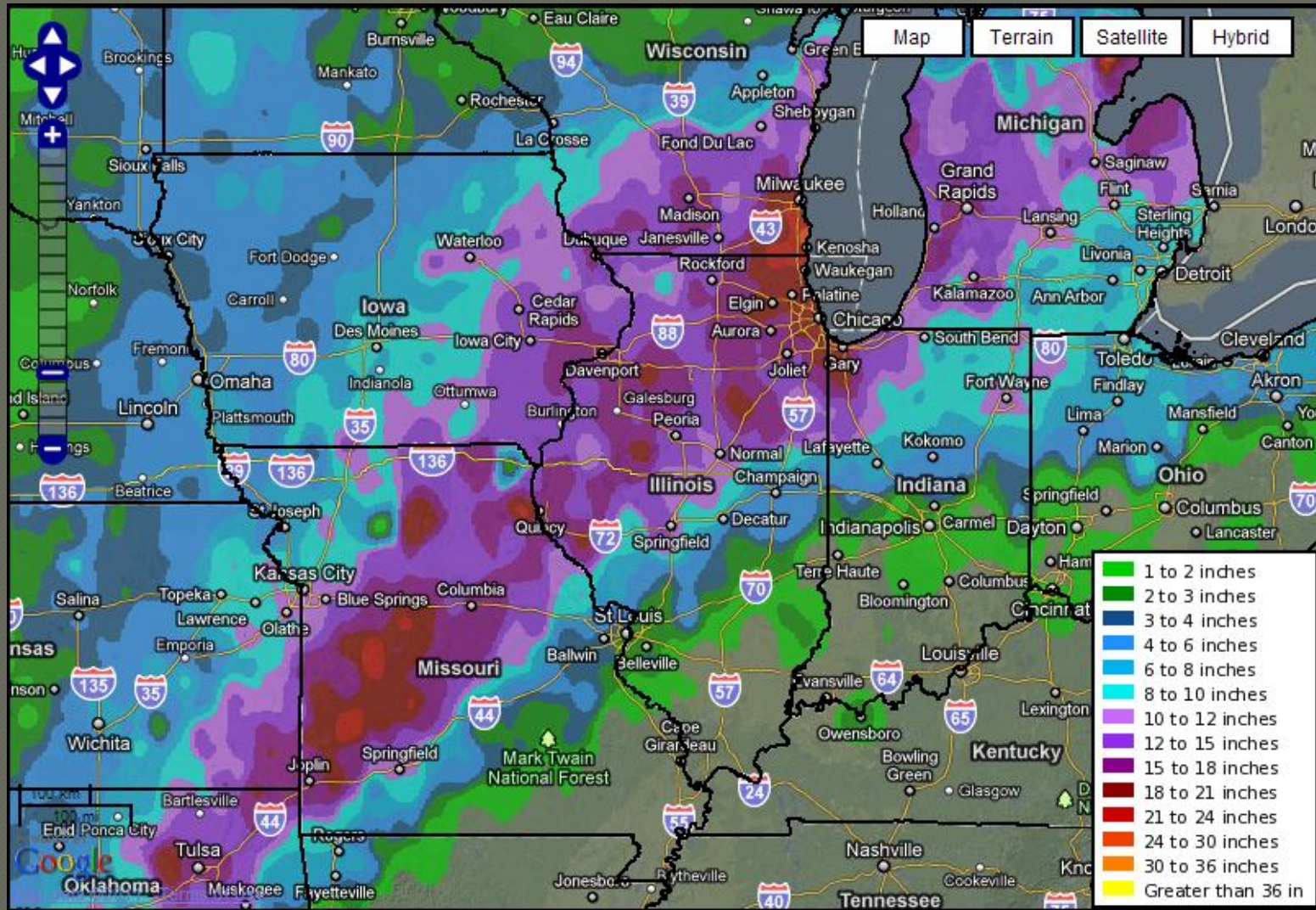
50 to 60 mph
winds

Zero visibility

Scene from NWS Lincoln



2011: A Year of Extreme Weather



2011: A Year of Extreme Weather

**Record Number of Tornadoes
Across the U.S.**

Near Tuscaloosa, Alabama
April 27, 2011

2011: A Year of Extreme Weather

**Only 21 Tornadoes Across
Central Illinois Through 11/18/11**

**Richard Lewis
Near Rantoul
May 7, 2011**



2011: A Year of Extreme Weather

Historic Flooding in Jacksonville



Jacksonville
June 18, 2011

4 to 6 inches
of rain in less
than 6 hours

Part of I-72
closed

Water treatment
plant out of
service for
weeks

2011: A Year of Extreme Weather

Excessive Heat



Days of 90+ Heat

Peoria: 32 (16 is normal)

Springfield: 43 (20 is normal)

Highs above **100** in early September

Broke record for hottest temp ever recorded in September in Springfield (**102**)

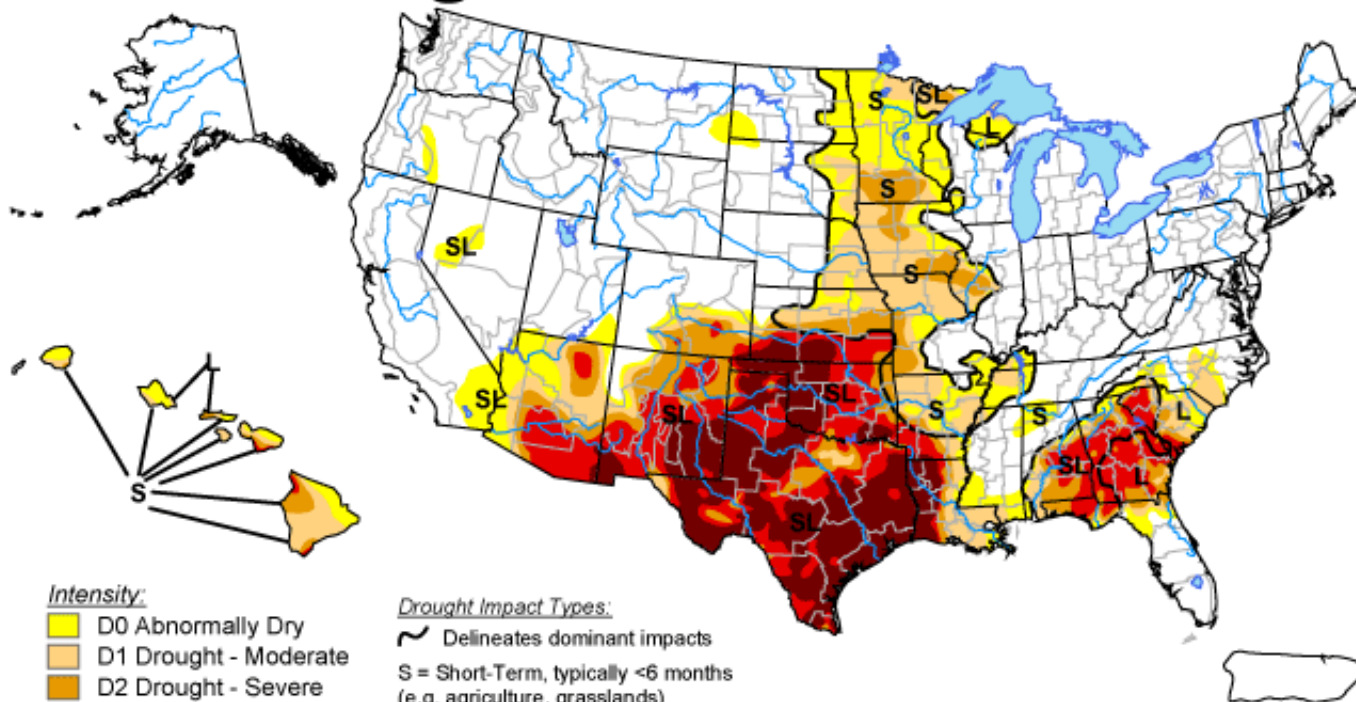
Wet spring & early summer turned dry by August with severe drought expanding across Central IL into September

2011: A Year of Extreme Weather

U.S. Drought Monitor

November 1, 2011

Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- Delineates dominant impacts
- S = Short-Term, typically <6 months
(e.g. agriculture, grasslands)
- L = Long-Term, typically >6 months
(e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. See accompanying text summary
for forecast statements.

<http://droughtmonitor.unl.edu/>



Released Thursday, November 3, 2011

Author: Brian Fuchs, National Drought Mitigation Center

So Why Are We Here?

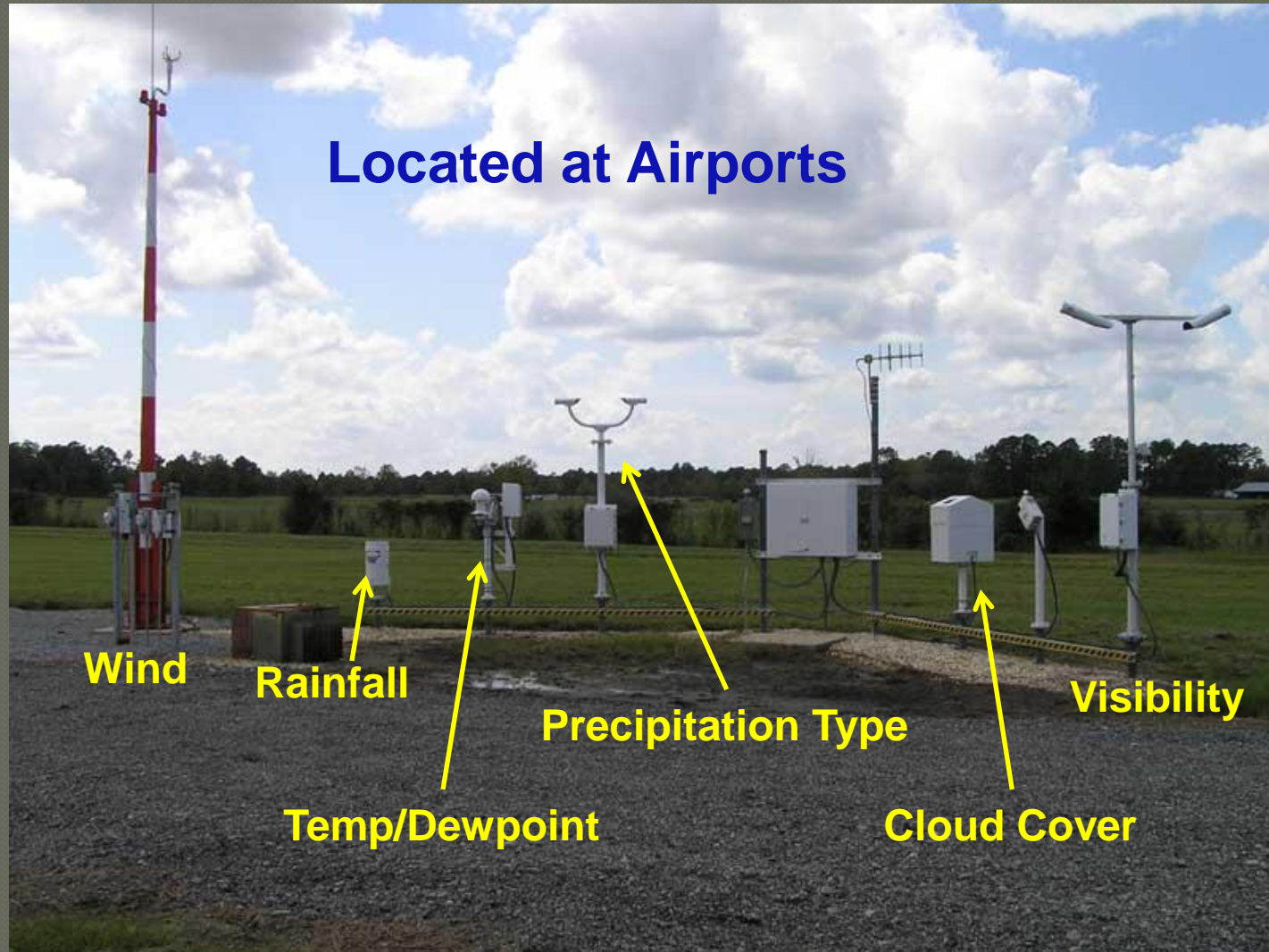
- ◉ Because we NEED your help!
- ◉ The weather report you provide may be the **ONLY ONE** we get from your community
- ◉ Make a difference...participate in SWOP!

What is SWOP?

- ◉ Supplemental network of volunteer weather observers
- ◉ Provide valuable real-time reports during significant weather
- ◉ Fill major gaps in existing observation network

Automated Observations

Located at Airports



Wind

Rainfall

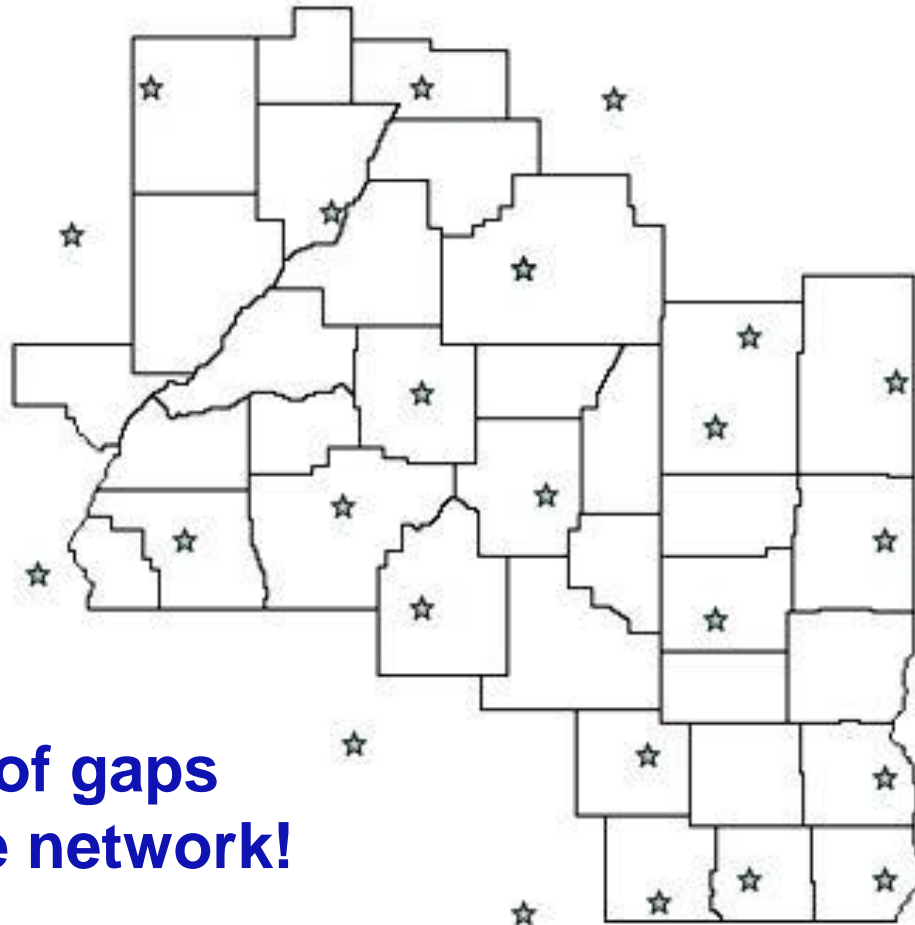
Temp/Dewpoint

Precipitation Type

Cloud Cover

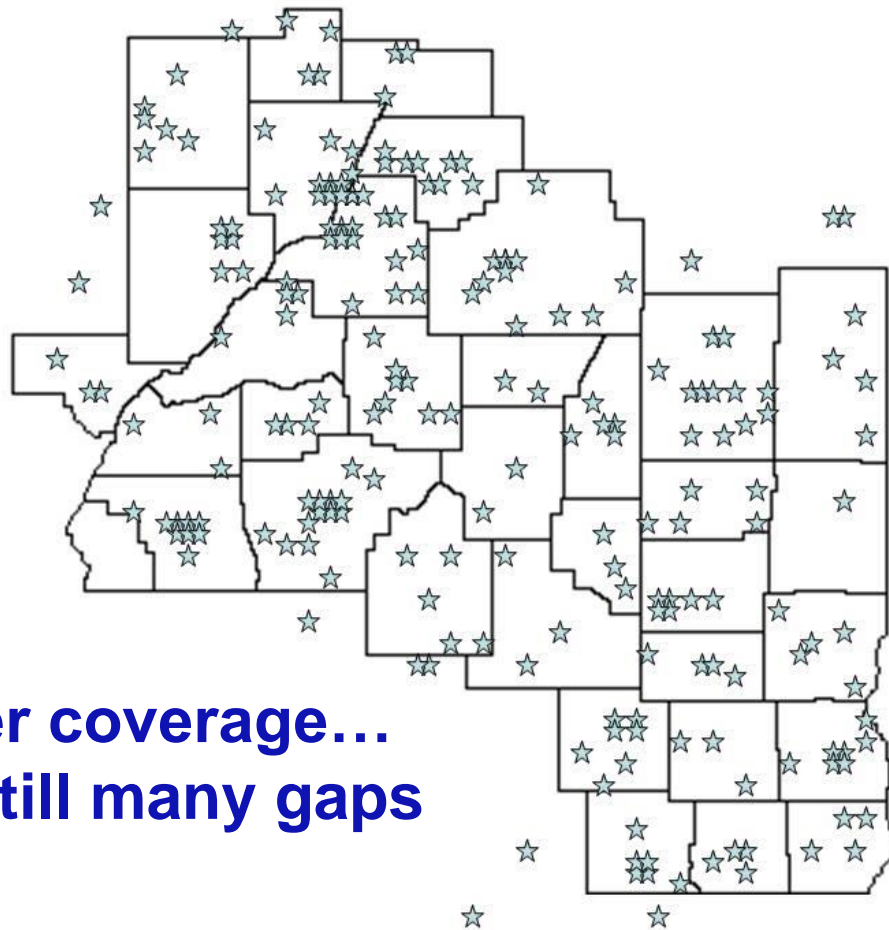
Visibility

Automated Observations



**Lots of gaps
in the network!**

SWOP Network – over 275 trained observers!



**Better coverage...
but still many gaps**

SWOP Network Provides...

- ◉ Better areal coverage of weather observations
- ◉ Real-time data during storms
- ◉ Reliable human observations
- ◉ Snowfall (not measured by automated stations)

What the NWS Does For SWOPs

- SWOP members frequently updated through email/webpage
- “Heads-up” email before significant events
- Precipitation Graphics/Event Summaries
- Weekly Weather Discussion
- Photo Gallery

What the NWS Does For SWOPs

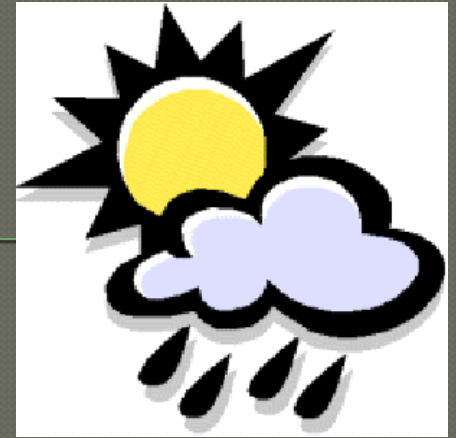
- ◉ Our webpage:

<http://www.crh.noaa.gov/ilx/?n=swop>

- ◉ E-mail:

nwslilx@noaa.gov

What to Report



- ◉ Wind Damage
- ◉ Hail
- ◉ Flooding
- ◉ Storm clouds (wall, funnel, shelf)
- ◉ Fog
- ◉ Rainfall/snowfall



What to Report: Wind Damage

- Thunderstorm wind gusts of **58 mph** or greater are technically considered “severe”
- Avoid wind speed estimates
- The **DAMAGE** you report will help us determine the speed

What to Report: Wind Damage

Trees blown down



Rural Menard County - June 4, 2011

What to Report: Wind Damage

Tree branches blown down



Report approximate diameter

What to Report: Wind Damage

Shingles blown off roof



Clay County - May 2, 2011

What to Report: Wind Damage

Siding torn off house



Clark County – June 25, 2011

What to Report: Wind Damage

Flattened crops



Review of Wind Damage

- Avoid wind speed estimates
- Report the **damage** caused by the wind
- When reporting tree branches down, please provide diameter if possible
- Type and health of tree are important as well

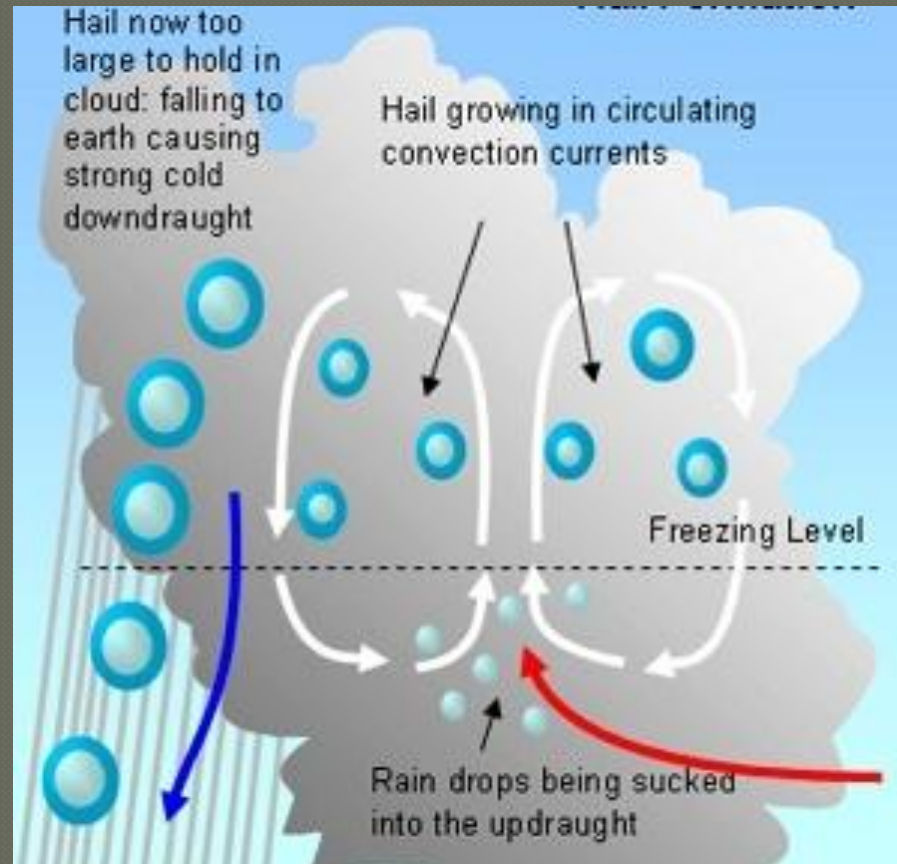
What to Report: Hail



- Hailstones **1 inch** in diameter or greater are classified as “severe”
- Report hail of **ANY** size (even BBs and peas)
- Report size of **LARGEST** stone observed

What to Report: Hail

Hail size is a key indicator of updraft strength and overall storm severity



What to Report: Hail

Compare size to coin or other common object



What to Report: Hail

Hail Diameter (inches)	Description
1/4	Pea
1/2	Plain M&M
3/4	Penny
7/8	Nickel
1	Quarter
1 1/4	Half-dollar
1 1/2	Ping-Pong Ball
1 3/4	Golfball
2	Hen Egg
2 1/2	Tennis Ball
2 3/4	Baseball
3	Teacup
4	Grapefruit
4 1/2	Softball

Review of Hail

- ◉ **Anytime** you observe hail, please let us know!
- ◉ Report size of largest stones
- ◉ Use hail size chart
- ◉ Exercise caution when hail is falling. Do not risk injury to get a precise measurement!

What to Report: Flooding



Flooded Roads



Jacksonville – June 18, 2011

What to Report: Flooding

Water Flowing Across Roads



Steve Hardesty
Near Birds
May 21, 2010

- Flooding is the **#1** storm related killer!
- Most deaths occur in cars
- Most flash floods occur at night - peaking around **1:00 AM** in IL

What to Report: Flooding

This is why we don't drive across flooded roads!



Near Geneseo, IL

May 13, 2010

The Power of Water

Video



Flash Flood in Toowoomba, Australia

1/10/11

What to Report: Flooding

Urban Flooding



Clogged storm drains, flooded viaducts, etc

What to Report: Flooding

Flooded fields



**Water isn't a problem yet...but
soon could be**

What to Report: Flooding



River out of its banks

Lawrenceville – April 28, 2011

Review of Flooding

- Report water flowing across roads, creeks/rivers out of their banks, urban flooding
- Provide estimated depth of water flowing across road if possible
- **NEVER** drive through flood waters of any depth!

Weather Trivia

- Question: What year did the longest cold snap in Central Illinois occur? (Lows below zero)
- Answer: 1983**
- How many days did this cold snap last?
- Answer: 9 days (December 19-27)**

Weather Trivia

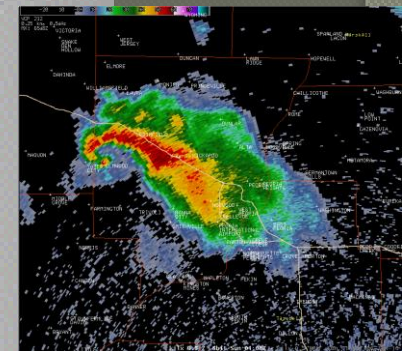
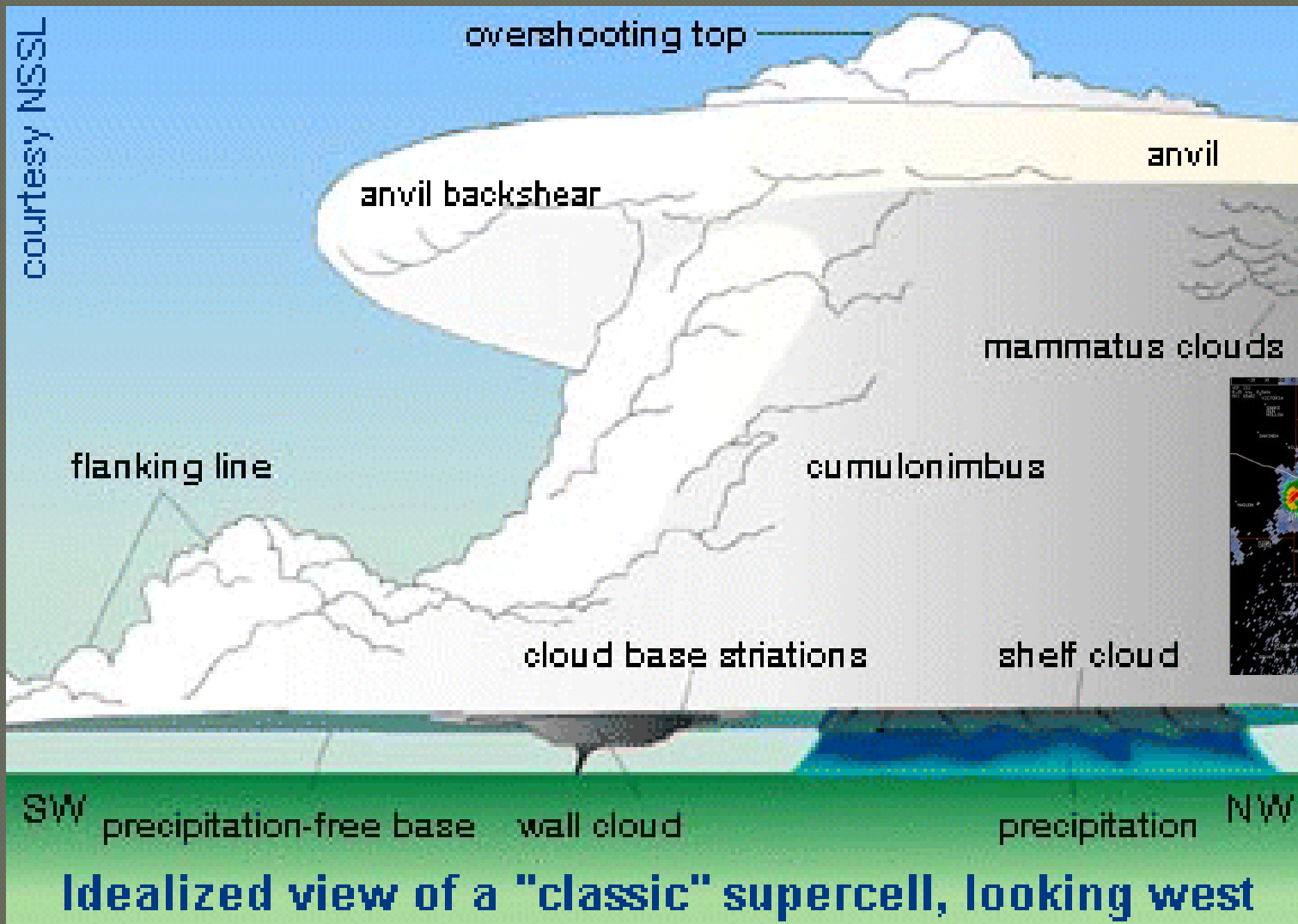
- ◉ Question: What year did the longest heat wave in Central Illinois occur? (Highs 100+)
- ◉ **Answer: 1936**
- ◉ How many days did this heat wave last?
- ◉ **Answer: 14 days (July 4-17)**

Storm Clouds



- When observing a storm, do **NOT** make a snap judgment
- Carefully observe for a period of time before reporting
- Clouds associated with severe storms include: shelf, wall, funnel
- A false wall cloud or funnel cloud report is not helpful to NWS forecasters

Supercell Thunderstorm



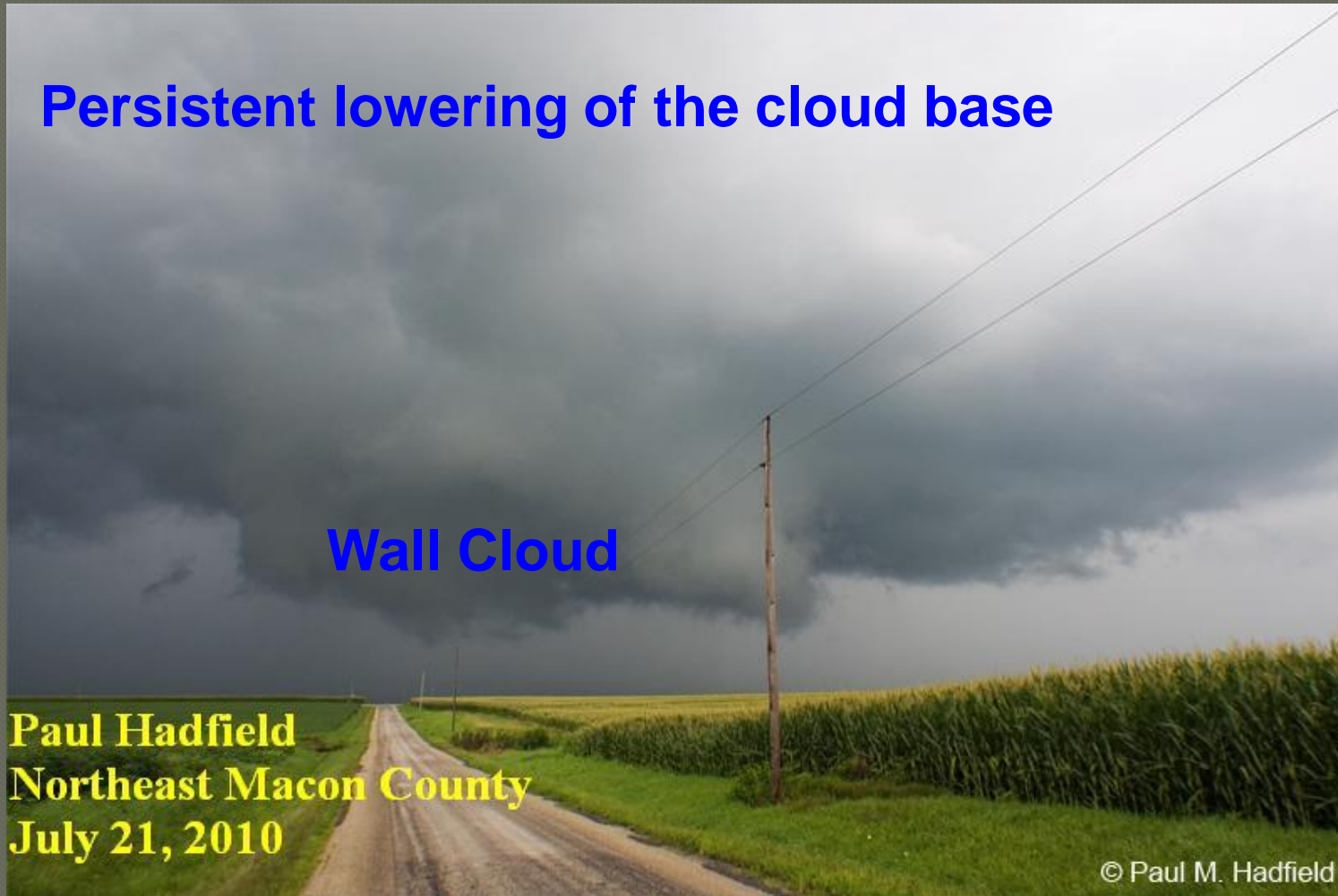
Supercell – Wall Cloud

Persistent lowering of the cloud base

Wall Cloud

**Paul Hadfield
Northeast Macon County
July 21, 2010**

© Paul M. Hadfield



Supercell – Wall Cloud

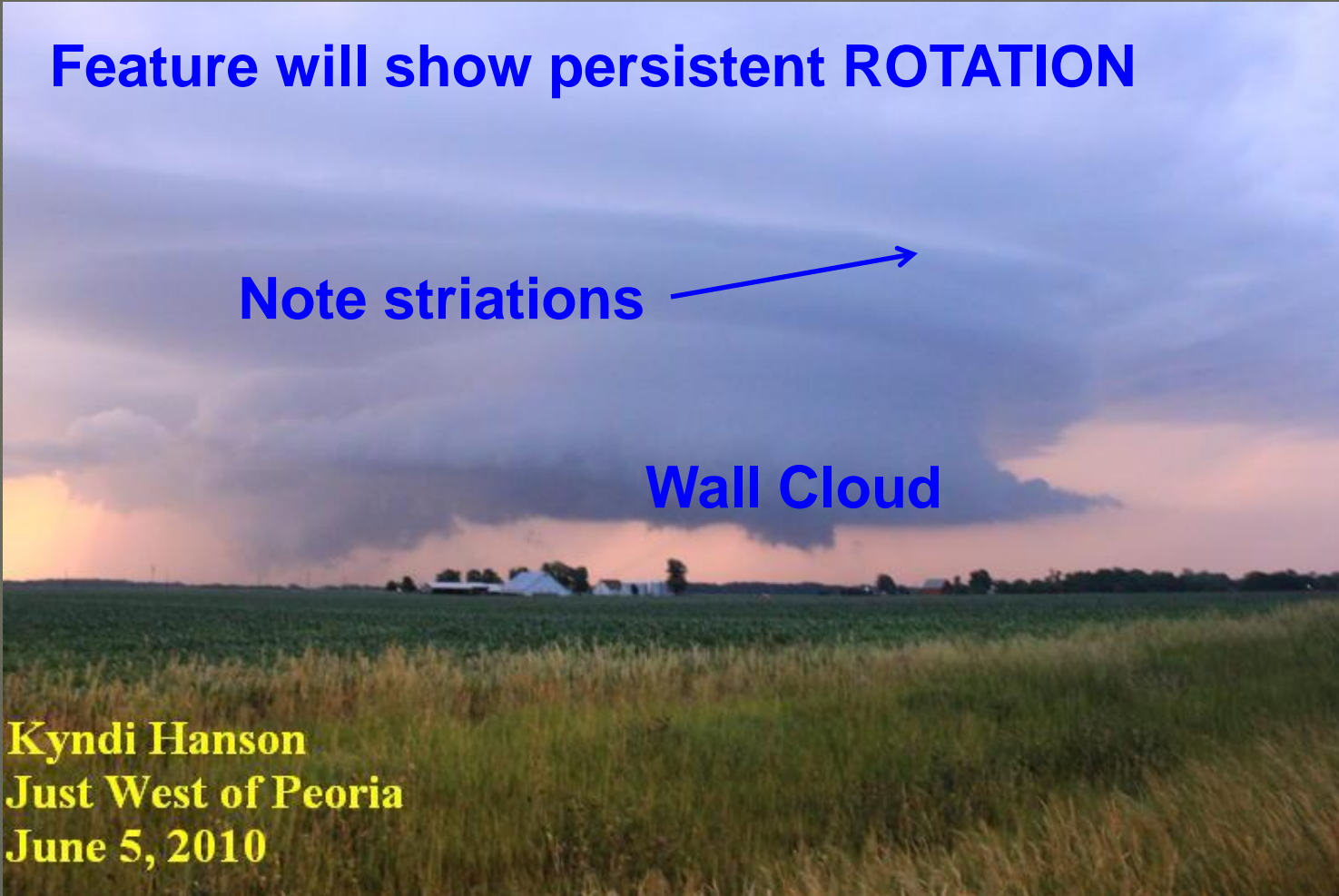
Feature will show persistent ROTATION

Note striations

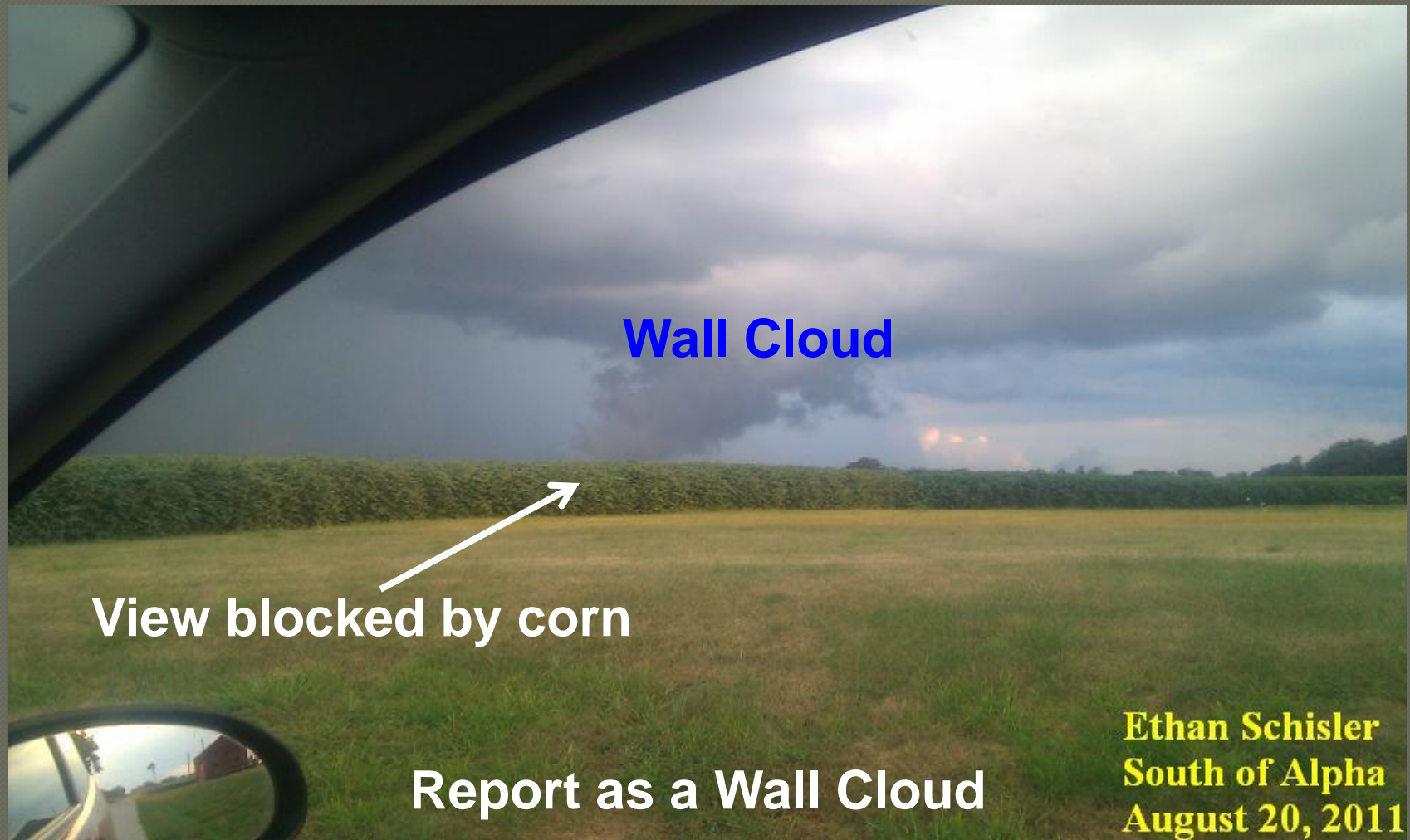


Wall Cloud

**Kyndi Hanson
Just West of Peoria
June 5, 2010**



Supercell – Wall Cloud



Supercell – Wall Cloud



Funnel Cloud

Rapid rotation, smooth in appearance

Funnel Cloud



**Jodi Irvin
July 30, 2011
Near El Paso**

© Jodi Irvin



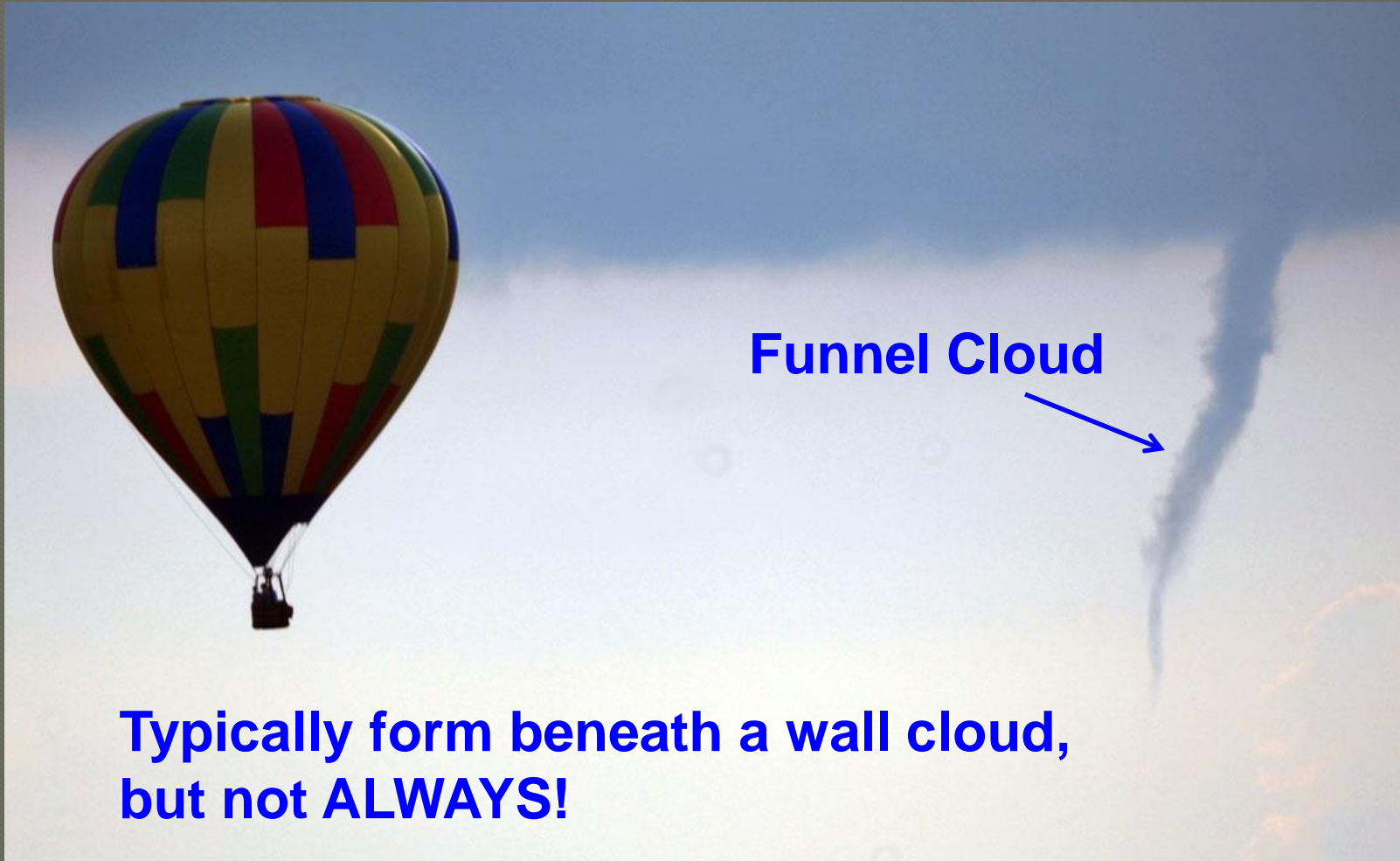
Funnel Cloud



PERSISTENT feature
with clear **ROTATION**

Jodi Irvin
Near Sherman
April 15, 2011

Funnel Cloud



Funnel Cloud

Typically form beneath a wall cloud,
but not **ALWAYS!**

Tornado

When a funnel cloud touches the ground,
it becomes a tornado



Jarrold Cook
Near Abingdon, IL
6/5/2010

Tornado



Jarrold Cook
Near Yates City, IL
6/5/2010

**Note debris...
indicating ground contact**

Tornado?

Report this as a funnel cloud

**Trees blocking view,
no visible debris**

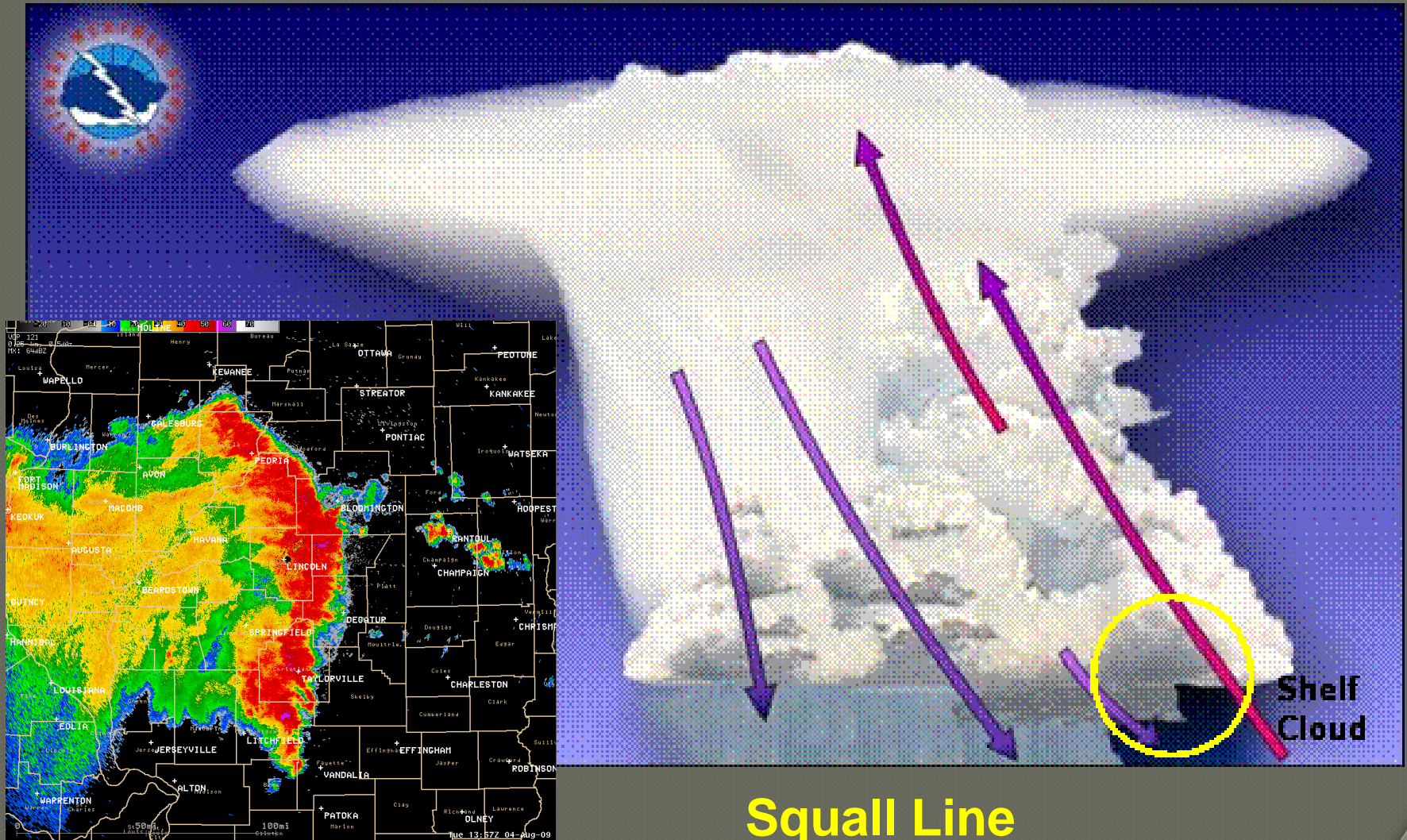
**Carl Fever
Near Chenoa
August 8, 2011**



Massachusetts Tornado (6/1/11)



Squall Line



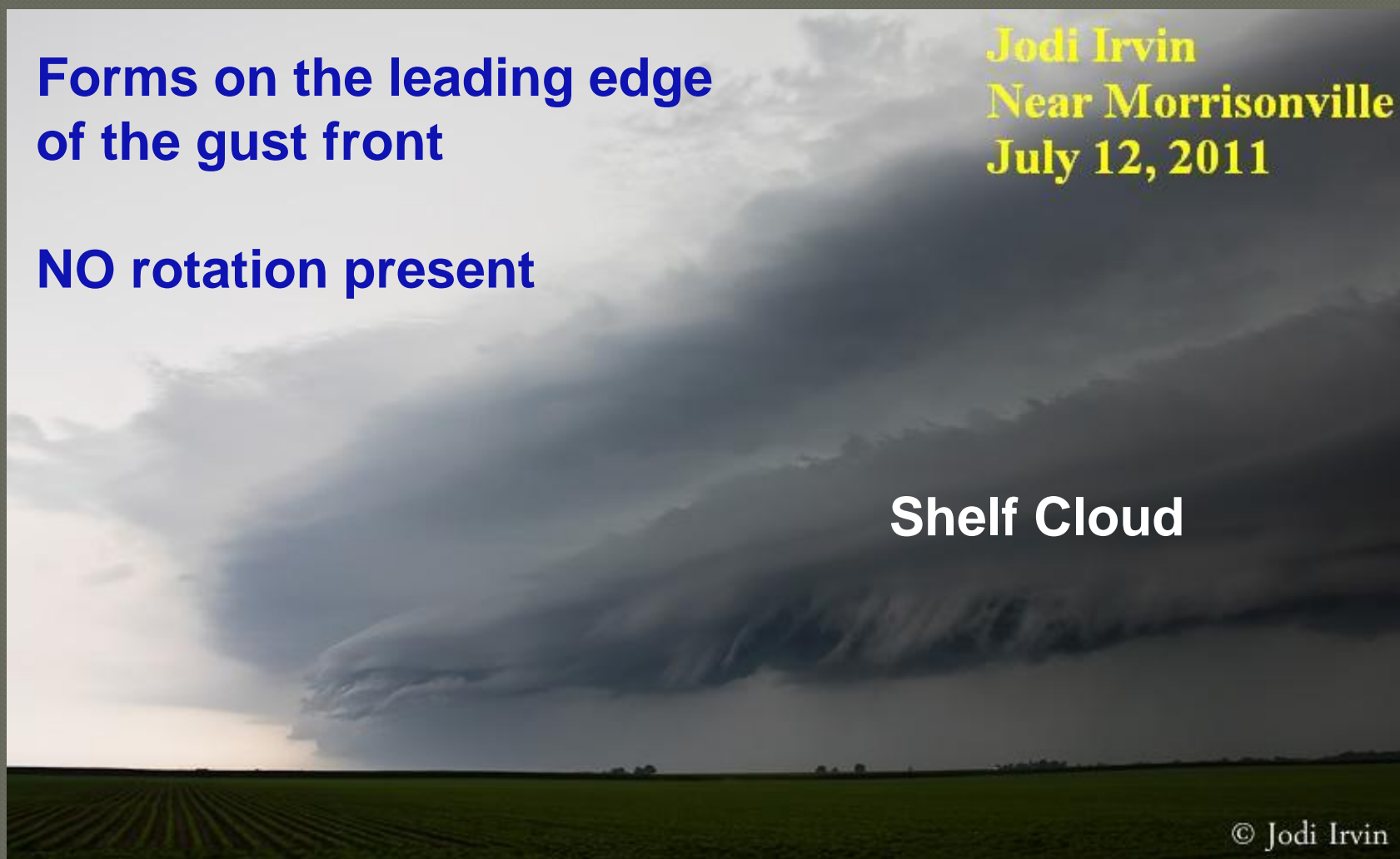
Squall Line – Shelf Cloud

**Forms on the leading edge
of the gust front**

NO rotation present

**Jodi Irvin
Near Morrisonville
July 12, 2011**

Shelf Cloud



© Jodi Irvin

Squall Line – Shelf Cloud

Indicative of very strong winds on the way

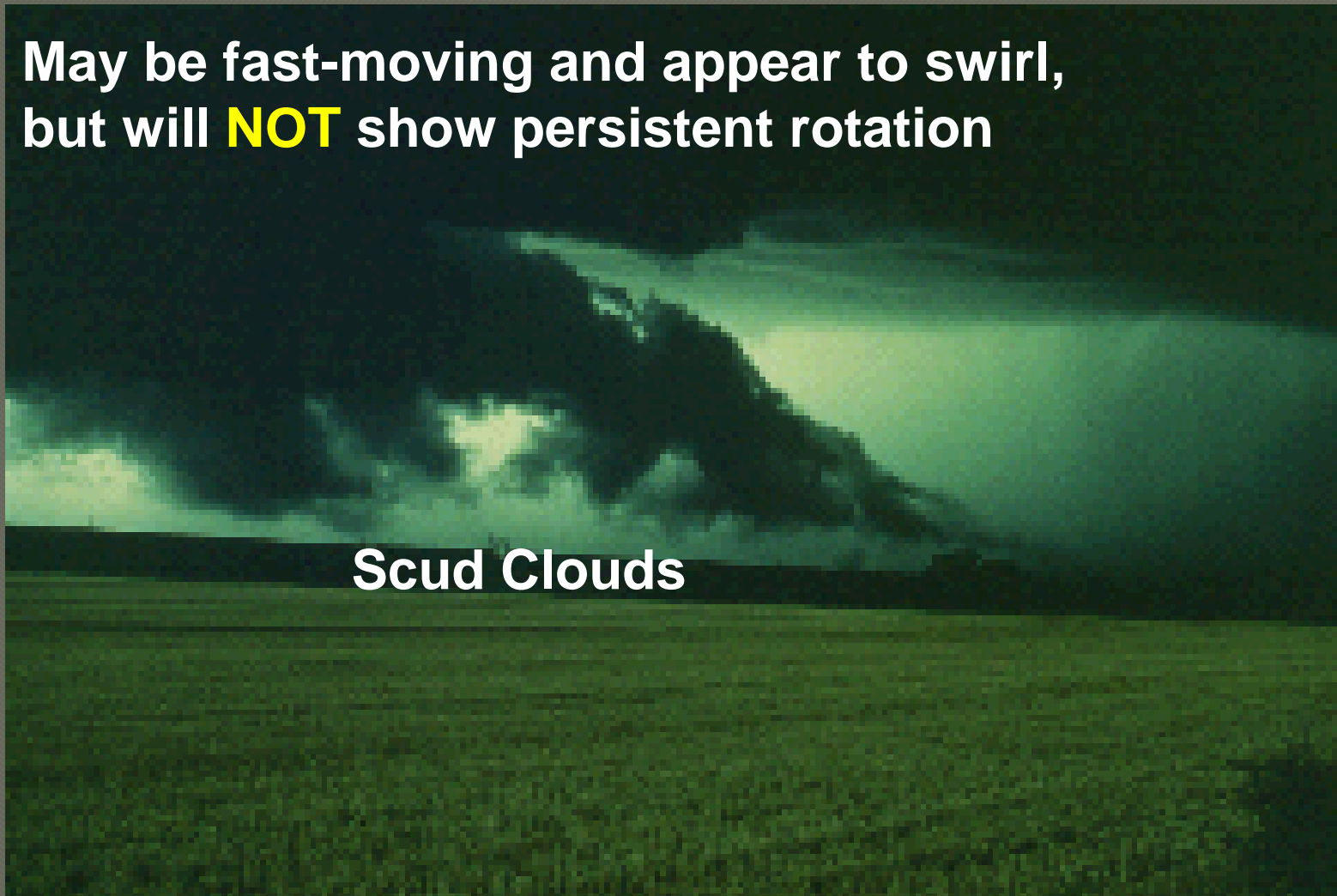
Shelf Cloud

**Roger Look
North of Normal
August 8, 2011**



Scud Clouds

May be fast-moving and appear to swirl,
but will **NOT** show persistent rotation



Scud Clouds

Will appear ragged and detached from cloud base

Scud Cloud



Review of Storm Clouds

- Carefully observe for a period of time **BEFORE** reporting
- Wall clouds will exhibit **PERSISTENT** rotation
- Scud clouds will constantly change in appearance, but will not show sustained rotation
- Stay safe and seek shelter if storm threatens

What to Report: Fog

- **Dense Fog Advisory** is issued for visibilities of $\frac{1}{4}$ mile or less
- Problem is, widely spaced automated sensors make it difficult to know exactly what's happening
- SWOP network could be valuable in providing dense fog reports



What to Report: Rainfall



The Official NWS Rain Gauge

Limited supply available tonight

Also available at:

<http://www.weatheryourway.com>

What to Report: Rainfall



Tipping Bucket Rain Gauge

Available from companies
such as **Davis,**
Oregon Scientific,
AmbientWeather, etc

What to Report: Rainfall



Standard Rain Gauge

Available at **WalMart**

What to Report: Rainfall

- Rainfall should be reported in **hundredths of an inch** (0.04, 0.67, 2.18, etc)
- Provide rainfall measurement immediately after storm concludes
- You may also send a 24-hour total at your convenience

What to Report: Snowfall



The Official NWS Snow Stick

Limited supply available tonight

Also available at:

<http://www.weatheryourway.com/>

What to Report: Snowfall



Yard Sticks,
Rulers,
and Tape
Measures
work fine too!

What to Report: Snowfall

- Select a flat, grassy location well away from obstructions (drifting effect)
- Do **NOT** take measurements on concrete or asphalt surfaces (melting effect)
- Take an average of at least **5** readings and use this as your official total

What to Report: Snowfall

- Snowfall should be reported in **tenths of an inch** (0.4, 2.5, 11.6, etc)
- Provide measurements **DURING** the storm if possible...as this helps us fine-tune our forecast
- Provide an event total **AFTER** the snow concludes

What to Report: Snowfall

- If you have questions or concerns...refer to the online **SWOP training page** for more information
- Or e-mail us with specific questions

How to Report



Online Weather Reporting System

<http://espotter.weather.gov/>

- **FASTEST** way to get weather data to us
- Simple, web-based form
- Automatically alerts on NWS forecaster computers!
- Provides us with real-time data during severe weather events

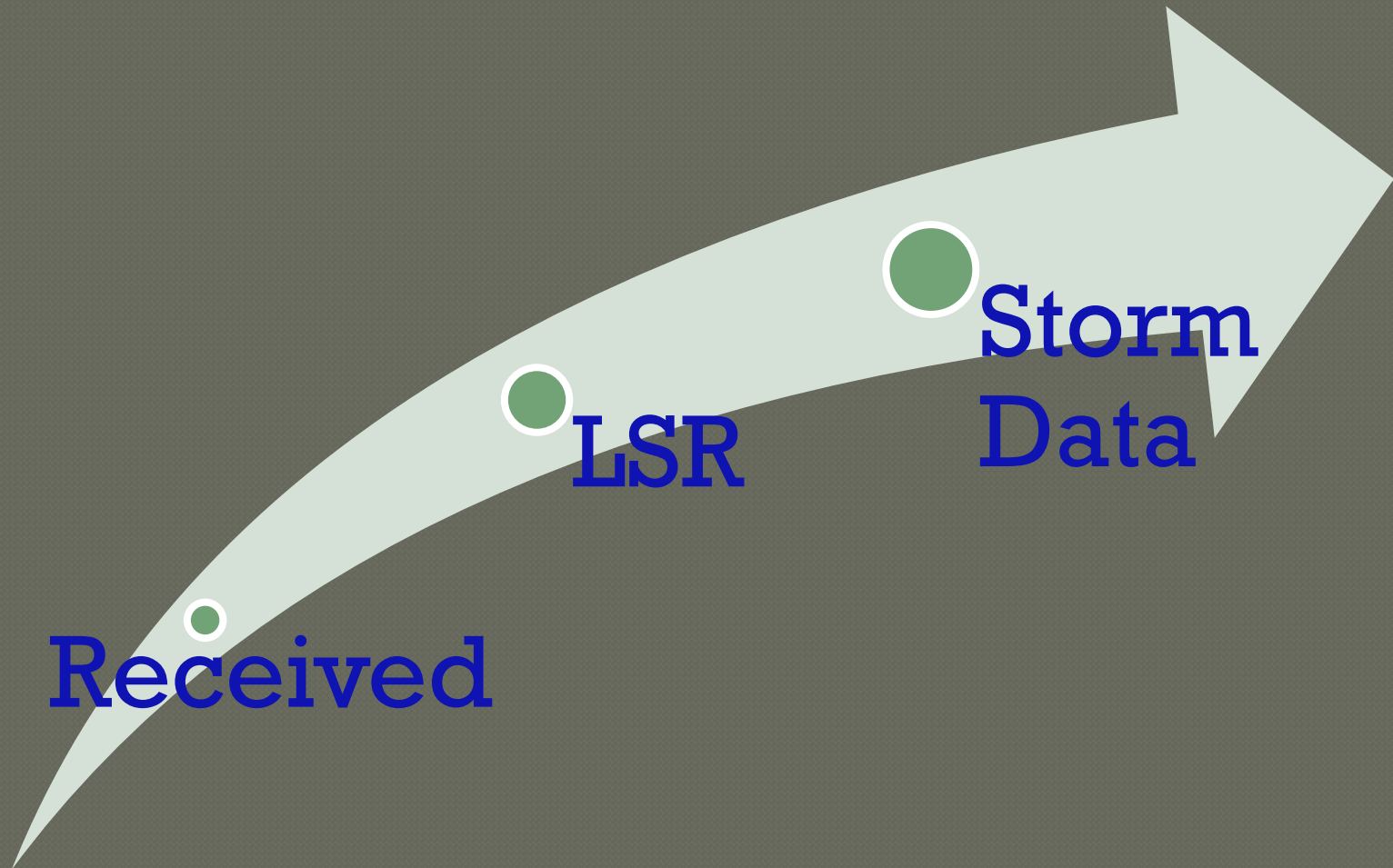
How to Report

- ◉ **WHAT:** Describe what you observed
- ◉ **WHERE:** Give your location
- ◉ **WHEN:** Provide the time of your observation
- ◉ Report only what you observe...
avoid “second-hand” information

Good Examples

- I measured 0.48 of rain between 8 AM and 4 PM today in Jacksonville
- A strong thunderstorm blew through Pekin this afternoon at around 3:30 PM. Several large tree branches were blown down around town

What Happens to Your Report?



Step 1: Report Received

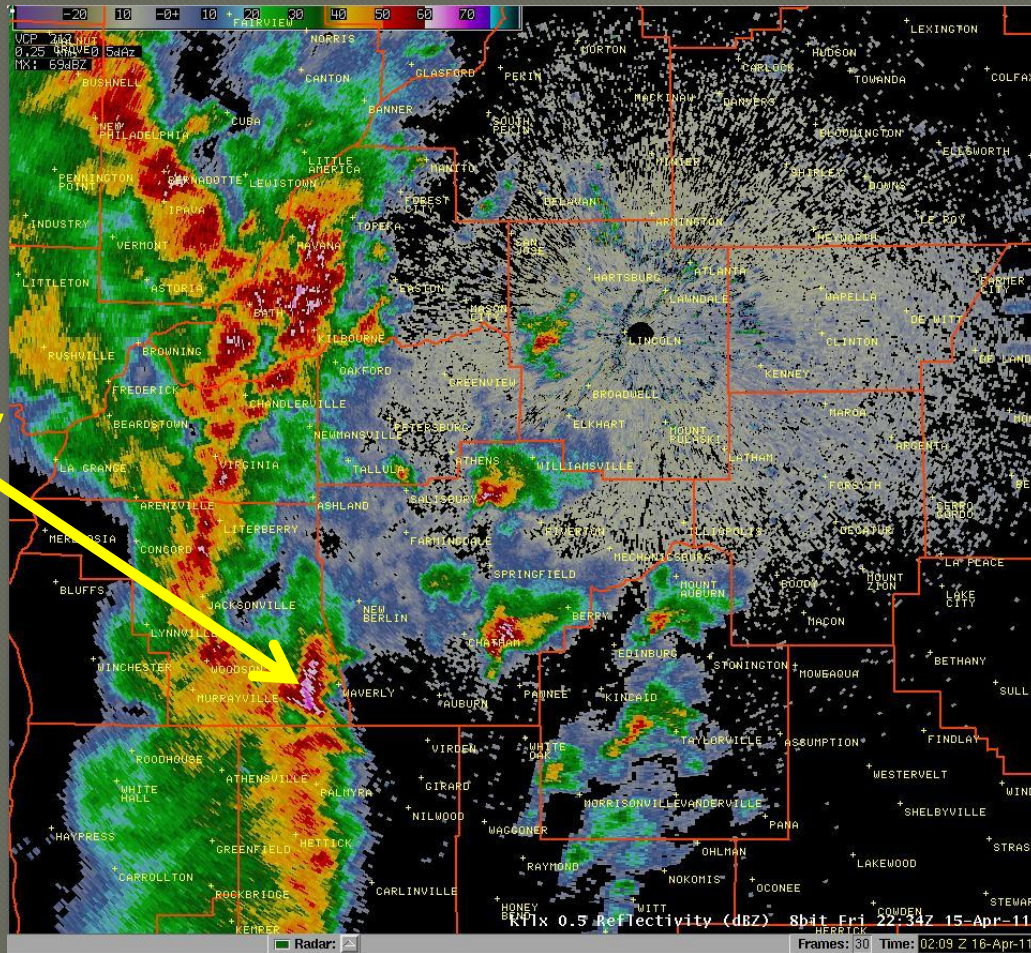
April 15, 2011 eSpotter message:

Observed 2" diameter hailstones just
west of Waverly at 5:40 PM

Step 2: Check Radar Data

Severe storm west of Waverly

Location and time of report look good!



Step 3: Local Storm Report

PRELIMINARY LOCAL STORM REPORT
NATIONAL WEATHER SERVICE LINCOLN IL
1055 AM CDT SUN APR 17 2011

..TIME...	...EVENT...	...CITY LOCATION...	...LAT.LON...
..DATE...MAG....	..COUNTY LOCATION..ST..	...SOURCE....
..REMARKS..			
0540 PM	HAIL	1 W WAVERLY	39.59N 89.97W
04/15/2011	M2.00 IN	MORGAN	IL MESONET

Transmitted via LSR for the public
and our media partners

Step 4: Storm Data

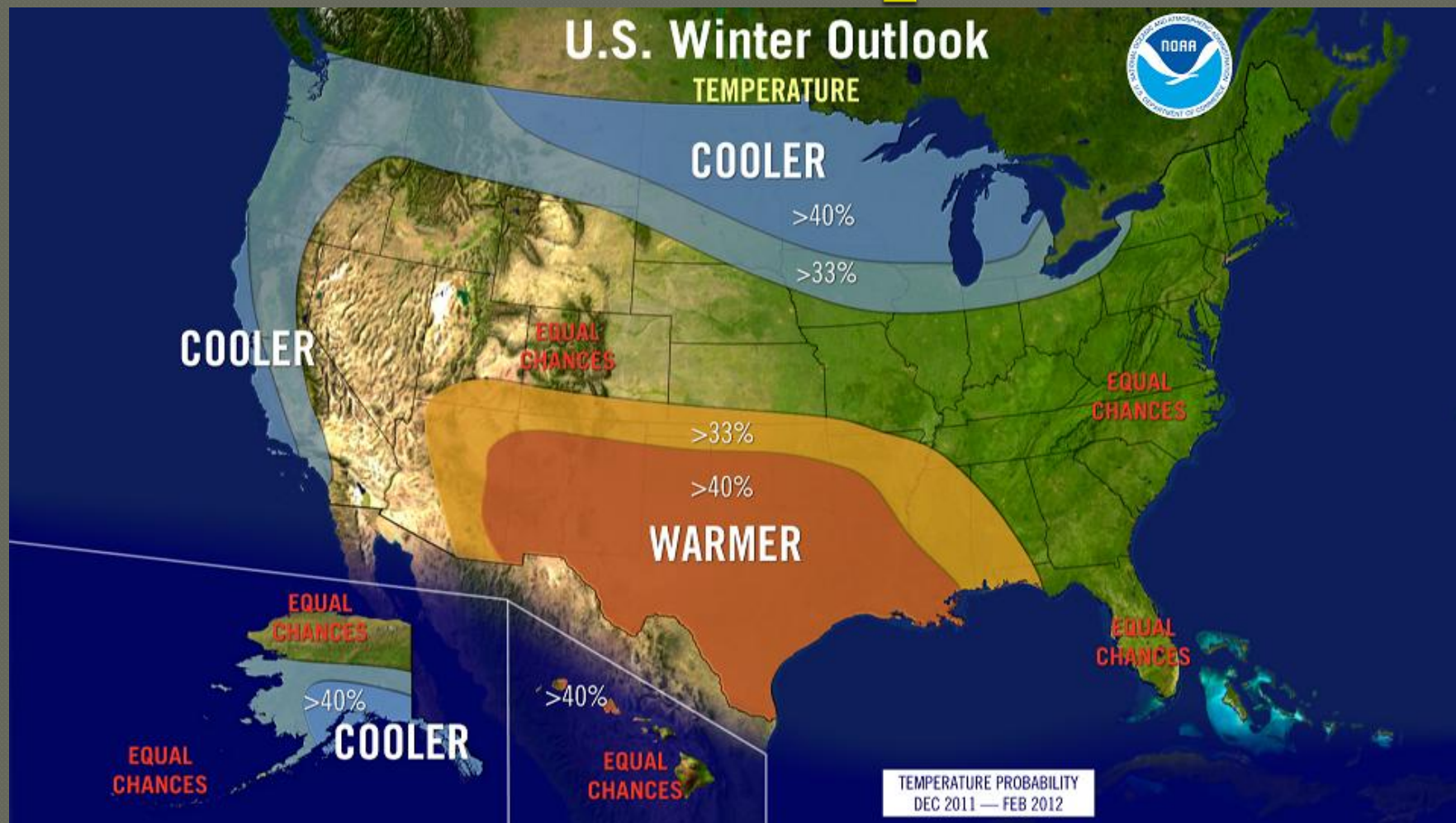
- Recorded as part of the official severe weather climatology
- Available online for historical purposes and future research
- <http://www.crh.noaa.gov/ilx/?n=svrclimo>

And Finally...

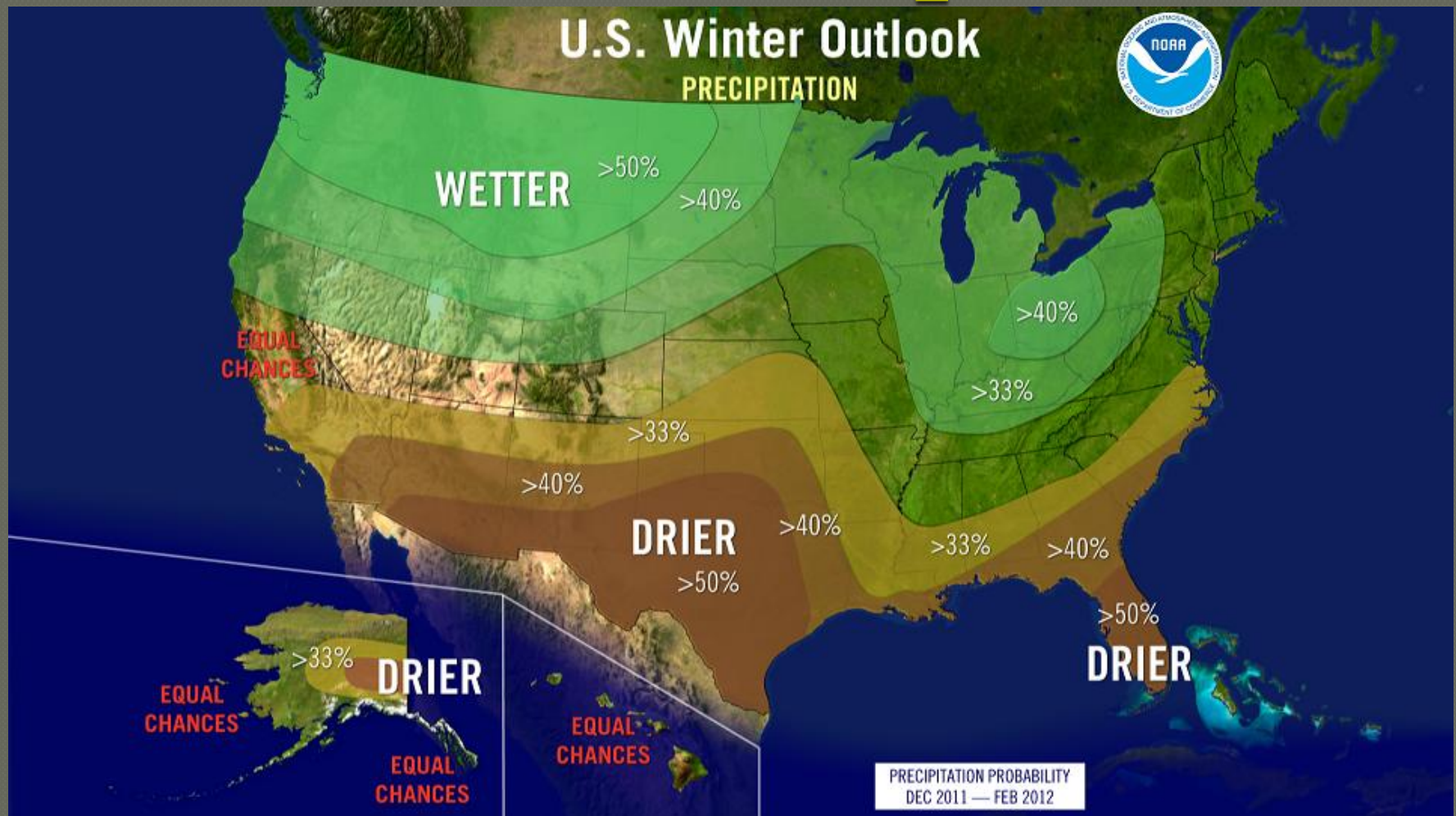


How bad will this
winter be???

Winter 2011 Temp Outlook



Winter 2011 Precip Outlook



Thanks for Coming!



**Teresa Thompson
Philadelphia 2S
January 12, 2010**